

# Sexual Health Risk Behavior Disparities Among Male and Female Adolescents Using Identity and Behavior Indicators of Sexual Orientation

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Received: 6 September 2016 / Revised: 5 September 2017 / Accepted: 12 September 2017 / Published online: 4 December 2017  
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**Abstract** Sexual minority adolescent sexual risk behavior studies often overlook young women, do not consider behavior- and identity-based sexual orientation indicators in combination, and focus mainly on condomless sex. We examined multiple risk behaviors in a large sample of adolescent young men and women using combined behavior- and identity-based indices. The 2015 Dane County Youth Assessment data included 4734 students in 22 high schools who had ever voluntarily engaged in sexual contact (51.7% male; 76.0% White, non-Hispanic). Items assessed having sex with unfamiliar partners, sex while using substances, using protection, and STI testing. Logistic regressions tested for disparities based on combined identity- and behavior-based sexual orientation indicators. For both young men and women, youth who reported heterosexual or questioning identities—but who had sex with same-sex partners—were at consistently greater risk than heterosexual youth with only different-sex partners. Also, for both young men and women, bisexuals with partners of both sexes more consistently reported higher risk than heterosexual youth than did bisexuals with only different-sex partners. Risk behavior for gay young men who had sex only with men mirrored those in extant literature. Risk levels differed for specific groups of sexual minority young women, thus deserving further attention. Findings underscore the need for sexual health research to consider sexual orientation in a more multidimensional manner.

**Keywords** Lesbian, gay, bisexual, questioning youth · Sexual health behavior · Sexual orientation · Sexually transmitted infections

## Introduction

Studies show significant sexual orientation disparities in rates of HIV, other sexually transmitted infections (STIs), and sexual health risk behaviors (Blake et al., 2001; Everett, Schnarrs, Rosario, Garofalo, Mustanski, 2014; Mustanski, Newcomb, DuBois, Garcia, & Grov, 2011; Tornello, Riskind, & Patterson, 2014). Among youth, historically this work has given a large focus to young men who have sex with men (YMSM), among whom HIV risks are markedly higher (Mustanski et al., 2011). Two major needs that have been highlighted in the broader sexual health risk literature include (1) the need to consider sexual orientation disparities not only based on behavior (e.g., YMSM), but also identity (e.g., youth who identify as lesbian, gay, or bisexual; Everett, 2013; Young & Meyer, 2005) and (2) the need for greater inclusion of women when looking at sexual orientation-based sexual health disparities (Diamant, Wold, Spritzer, & Gelberg, 2000; Marrazzo & Gorgos, 2012). We address these issues by examining sexual health risk behaviors in a large sample of adolescents with attention to disparities based on the intersection of sexual behavior and identity.

## Assessing Multiple Dimensions of Sexual Orientation

Sexual orientation can be conceptualized as multidimensional and based on several indicators, such as attraction (e.g., how someone feels toward potential partners), behavior (e.g., the sex of someone's sexual partners), or identity (e.g., whether someone identifies as lesbian, gay, bisexual, or heterosexual;

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Institute of Medicine, 2011; Laumann, Gagnon, Michael, & Michaels, 1994). Many sexual health studies have relied on behavior indicators of sexual orientation. Yet, there are several reasons not to rely solely on behavior when considering sexual orientation-based disparities. Youth reports of their sexual identity and behavior do not always align (Goodenow, Szalacha, Robin, & Westheimer, 2008; Mustanski et al., 2014). Consequently, some YMSM may identify as heterosexual, whereas others may identify as gay, bisexual, or questioning their sexual orientation identity. Likewise, some young women who have sex with women (YWSW) may identify as heterosexual, whereas others may identify as lesbian, bisexual, or questioning their sexual orientation identity. Such differences are likely due in part to the fact that sexual identity development is an ongoing process during adolescence (Tolman & McClelland, 2011) and can extend into adulthood (Diamond, 2008; Ott, Corliss, Wypij, Rosario, & Austin, 2011).

It could be particularly important to consider heterosexual YMSM as a distinct group of individuals because some studies among adults suggest that this group may be more likely to engage in risky sexual behavior and may have less access or exposure to HIV prevention messages and outreach than MSM who identify with minority sexual orientation identities (e.g., gay MSM or bisexual MSM; Goldbaum, Perdue, & Higgins, 1996; Wohl et al., 2002). Some research also suggests that heterosexual WSW may have profiles of sexual health risk behavior that are distinct from their exclusively heterosexual or sexual minority-identified peers (Bauer, Jairam, & Baidoobonso, 2010; Everett, 2013).

Therefore, although it remains important to consider patterns of sexual health risk behaviors based on sexual behavior, it is important to consider how these behavior indicators further intersect with sexual identity, particularly to distinguish heterosexual YMSM and heterosexual YWSW. Doing so could capture greater nuance to patterns of risk. Notably, Goodenow et al. (2008) were able to use both identity-based and behavior-based indices of sexual orientation to identify health disparities in their sample. However, their approach focused on controlling for one indicator (e.g., behavior) while considering disparities based on the other indicator (e.g., identity). In the current study, we consider the intersection of both indicators in how they form distinct groups of sexual minority youth (e.g., heterosexual YMSM or heterosexual YWSW).

### Expanding the Scope of Coverage of Sexual Health-Related Behavior

It is important to consider a range of behaviors that place youth at risk for HIV and other STIs and to consider disparities in these behaviors as well. Research on elevated sexual health risk behavior has focused on condomless sex among sexual minority men (particularly YMSM; Mustanski et al., 2011). This behavior carries especially high risk for contracting HIV and

other STIs (Varghese, Maher, Peterman, Branson, & Steketee, 2002). YMSM are also more likely to report a greater number of sexual partners, but are less likely, or at least no more likely, to use condoms than their male peers who do not have sex with men (Blake et al., 2001; Pathela & Schillinger, 2010). At the same time, other risk behaviors coincide with condomless sex. Some findings indicate that YMSM are more likely to engage in condomless sex when they use substances during sex (Celenano et al., 2006; Clatts, Goldsamt, & Yi, 2005; Mustanski et al., 2011). Also, YMSM more so than adult MSM have condomless sex with their primary partner while concurrently having sex with other partners (Guzman et al., 2005; Mustanski et al., 2011). Thus, we look not only at disparities in having unprotected sex, but also consider disparities in having sex while using substances and having sex with unfamiliar partners.

Strong concerns have been noted about the relative absence of sexual minority women in sexual health risk research (Diamant et al., 2000; Marrazzo & Gorgos, 2012). Researchers have cautioned against assuming that sexual minority women are not at risk for STIs or do not face other sexual health-related disparities (Bailey, Farquhar, Owen, & Mangtani, 2004; Bailey, Farquhar, Owen, & Whittaker, 2003). These sexual health behavior concerns are also relevant for YWSW. In some studies, sexual minority young women—whether based on identity, behavior, or attraction—are more likely to engage in sex while using substances, have unprotected sex, or report having been diagnosed with an STI than heterosexual young women (Goodenow et al., 2008; Oshri, Handley, Sutton, Wortel, & Burnette, 2014; Riskind, Tornello, Younger, & Patterson, 2014; Saewyc, Poon, Homma, & Skay, 2008). Other studies also have shown greater STI risk behaviors among women who have sex with women than women who have sex only with men (Fethers, Marks, Mindel, & Estcourt, 2000) and that some women who have sex with women engage in higher risk sexual behaviors (e.g., sex with partners with HIV; Tat, Marrazzo, & Graham, 2015). Although the Centers for Disease Control and Prevention (CDC) estimates very low HIV transmission risk for WSW (CDC, 2015a), it is important to note that (1) other STI transmission is possible between women and there are higher reports of being diagnosed with an STI among WSW (Goodenow et al., 2008; Oshri et al., 2014), and (2) women who currently report having sex only with women may have had sex with men in the past (Diamond, 2008; Ott et al., 2011; Tolman & McClelland, 2011).

Other research has focused on youth who identify as bisexual or those who engage in sexual behavior with partners of both sexes and has found that they are more likely to engage in some riskier sexual health behaviors. For instance, bisexual adolescents and adults—both men and women—have reported a greater number of sexual partners, greater likelihood of having casual sexual partners, and at times have higher HIV and other STI prevalence (Bostwick, Hughes, & Everett, 2015; Everett et al., 2014; Friedman et al., 2014; Logie, Navia, & Loutfy, 2015; Sanders, Graham, & Milhausen, 2008; Tornello

et al., 2014). It is important to consider women in these comparisons because studies show variability among heterosexual, lesbian, bisexual, and queer women in STI risk (Bostwick et al., 2015; Logie et al., 2015). Failing to distinguish between sexual identities within sexual minority populations—whether based on behavior or identity—could therefore obscure important sexual health differences.

## The Current Study

Several important limitations need to be addressed in studies on sexual health risk among sexual minority youth; these include: (1) considering sexual orientation in a multidimensional manner based on both behavior and identity, (2) greater inclusion of young women, and (3) considering other sexual health risk behaviors relevant to both young men and women in addition to condomless sex. The current study addresses these limitations utilizing a large population-based sample of youth.

We hypothesized that there would be significant sexual orientation-based disparities across all sexual health risk behaviors. Among young men, we hypothesized that sexual minorities—based on their particular combinations of identity and behavior—would report higher risk levels than the comparison group of heterosexual young men who only had sex with women. These patterns would align with disparities that have been documented in extant research using behavior indicators of sexual minority status (Mustanski et al., 2011). Further, by utilizing the combination of identity and behavior indices, we also hypothesized that heterosexual young men who reported having sex with men (either only with men or with men and women) would have elevated risk levels compared to heterosexual young men who reported only having sex with women. Among young women, we expected to identify similar patterns of sexual orientation-based disparities for sexual minority young women and those who identified as heterosexual but who had sex with women (either only with women or with men and women). Finally, we examined differences in STI testing, given that some studies show that sexual minority individuals underutilize or have less access to sexual health care services (Charlton et al., 2011; Diamant et al., 2000).

## Method

### Participants

We analyzed data from the 2015 Dane County Youth Assessment (DCYA) in Wisconsin, which is comparable to the CDC Youth Risk Behavior Surveillance System (YRBSS; CDC, 2015b). The original sample included 13,905 youth (50.7% male; 75.4% White, non-Hispanic;  $M_{\text{age}} = 15.87$  years,  $SD = 1.21$ , age range = 14–18 years) in 22 high schools. To reduce

the potential of including untruthful or unreliable respondents, we excluded students who reported their height as over seven feet or their weight as less than 80 lb or over 400 lb ( $n = 247$ ). Also, because our study focused on sexual health risk behavior, only students who had ever voluntarily engaged in sexual contact with another person were included, producing a final sample of 4734 youth (of those excluded, 8370 reported they had never voluntarily engaged in sexual contact and 554 did not respond to this screener). Table 1 shows participant demographics and Table 2 shows the representation of specific sexual orientation groups based on the combined identity and behavior indices of sexual orientation. All students in Grades 9–12 in all districts except Madison were invited to participate; given the size of Madison schools a random sample of 50% of youth was invited to participate. Madison data were then weighted by age, grade, sex, and race/ethnicity to be representative of the district. Participation was over 85% across all districts. Students completed the survey in computer laboratories at school. We secured IRB approval for secondary data analyses.

## Measures

### Demographics and Control Variables

Youth reported their age, sex (response options: male or female), and race/ethnicity (which we dichotomized as 0 = White; 1 = racial/ethnic minority). Two items asked youth whether they had discussed sexual health issues with their parents, preceded by the stem, “Have you had a good talk with your parents about...” (1) waiting to have sex and (2) birth control and STIs (response options: 0 = no or 1 = yes). We summed the items as a continuous variable for a parental sexual health discussion total score.

### Sexual Orientation

Youth reported their sexual orientation using identity-based and behavior-based questions. The identity-based question was, “Which of the following best describes you?” (response options: heterosexual/straight, gay or lesbian, bisexual, questioning my sexual orientation, or other). We combined the questioning and other categories in our analyses. For youth who reported that they had ever engaged in voluntary sexual contact with another person, they also responded to the behavior-based item for sexual orientation, which was, “Who have you had voluntary sexual intercourse or oral sex with?” (response options: females, males, or females and males). We placed youth into specific sexual orientation categories based on their combined responses to both items. For instance, young men who reported that they identified as heterosexual/straight and who reported that they had sex with females were included in the heterosexual YMSW-only group.

**Table 1** Participant demographic information

	Young men N (%)	Young women N (%)
Sexual orientation: identity based		
Heterosexual/straight	2263 (92.9)	1928 (84.5)
Gay or lesbian	52 (2.2)	47 (2.1)
Bisexual	54 (2.2)	216 (9.5)
Question/other	66 (2.7)	88 (3.9)
Sexual orientation: behavior based		
With females	1959 (93.4)	43 (2.2)
With males	56 (2.7)	1759 (90.0)
With females and males	82 (3.9)	152 (7.8)
Gender		
Male	2442 (51.7)	–
Female	–	2281 (48.3)
Race/ethnicity		
Asian (not Hmong identified)	46 (1.9)	41 (1.8)
Asian (Hmong identified)	15 (0.6)	12 (0.5)
Black or African American (non-Hispanic)	169 (6.9)	102 (4.5)
Hispanic or Latino	131 (5.4)	130 (5.7)
Middle Eastern/Arab American	11 (0.5)	8 (0.4)
Native American	18 (0.7)	19 (0.8)
White (non-Hispanic)	1851 (76.0)	1791 (78.6)
Multiracial	168 (6.9)	155 (6.8)
Other	28 (1.1)	21 (0.9)
Age		
14 years old or younger	127 (5.2)	109 (4.8)
15 years old	459 (18.8)	372 (16.3)
16 years old	672 (27.5)	636 (27.9)
17 years old	752 (30.8)	808 (35.4)
18 years old or older	432 (17.7)	356 (15.6)

Sample sizes are reported for the original pre-weighted sample. Percentages are within gender with the exception of the percentages for the gender item, for which the percentages reflect the total sample

### Sexual Health Behaviors

Three items asked youth about sexual health risk behaviors and one item asked about STI testing. The first item was, “How many people have you had voluntary sexual intercourse or oral sex with that you just met or didn’t know very well?” (response options: none ever, 1 person, 2 people, 3 people, 4 people, 5 people, and 6 or more people). Because of the skewed distribution of responses, we dichotomized them (0 = never has had sex with an unfamiliar partner; 1 = has had sex with an unfamiliar partner). The second item was, “Have you ever had voluntary sexual intercourse or oral sex with someone while

**Table 2** Sexual orientation groups based on combined identity and behavior indices

	N (%)
Young men	
Hetero YMSW-only	1891 (90.4%)
Hetero YMSM/MW	43 (2.1%)
Gay YMSM-only	40 (1.9%)
Gay YMSW/MW	8 (0.4%) <sup>a</sup>
Bisexual YMSM-only	2 (0.1%) <sup>a</sup>
Bisexual YMSMW	25 (1.2%)
Bisexual YMSW-only	20 (1.0%)
Q/O YMSM/MW	24 (1.1%)
Q/O YMSW-only	38 (1.8%)
Young women	
Hetero YWSM-only	1611 (82.5%)
Hetero YWSW/MW	46 (2.4%)
Lesbian YWSW-only	24 (1.2%)
Lesbian YWSM/MW	13 (0.7%) <sup>a</sup>
Bisexual YWSW-only	8 (0.4%) <sup>a</sup>
Bisexual YWSMW	81 (4.1%)
Bisexual YWSM-only	104 (5.4%)
Q/O YWSW/MW	25 (1.3%)
Q/O YWSM-only	40 (2.0%)

Sample sizes are reported for the original pre-weighted sample. Percentages are within gender. Hetero = heterosexual/straight; YMSW = young men who have sex with women; YMSM = young men who have sex with men; YMSMW = young men who have sex with men and women; Q/O = questioning/other; YWSM = young women who have sex with men; YWSW = young women who have sex with women; YWSMW = young women who have sex with men and women

<sup>a</sup>Because of the small sample sizes of these groups, analyses were not performed/reported for members of these groups

you were under the influence of alcohol, marijuana or other drugs?” (response options: no never, yes a few times, or yes many times). We dichotomized the responses (0 = never has had sex while using substances; 1 = has had sex while using substances). The third item was “When you have sexual intercourse or oral sex, how often do you and your partner use a barrier method (condom, dental dam) to prevent sexually transmitted infections?” (response options: never, sometimes, or always use one). For our analyses, we dichotomized the response options as always uses protection or never/sometimes uses protection. Finally, youth responded to an item, “Have you ever been tested for a sexually transmitted infection?” (response options: yes, no, or not sure). For our analyses, we dichotomized the response options as yes or no/not sure.

### Statistical Analysis

We conducted logistic regression analyses to test for sexual orientation-based disparities across the sexual health risk

**Table 3** Number and percentage of youth engaging in sexual health risk behaviors: Young men

	Has had sex with unfamiliar partner (vs. no)	Has had sex with substances (vs. no)	Never/sometimes use protection (vs. always)	No/not sure to STI testing (vs. yes)
Hetero YMSW-only	859 (36.0%)	775 (31.8%)	1074 (45.9%)	2012 (83.7%)
Hetero YMSM/MW	38 (73.1%)	37 (71.2%)	33 (70.2%)	39 (79.6%)
Gay YMSM-only	37 (60.7%)	17 (28.3%)	43 (72.9%)	52 (85.2%)
Gay YMSW/MW	a	a	a	a
Bisexual YMSM-only	a	a	a	a
Bisexual YMSMW	23 (62.2%)	27 (73.0%)	16 (43.2%)	33 (89.2%)
Bisexual YMSW-only	7 (20.0%)	17 (47.2%)	20 (57.1%)	29 (82.9%)
Q/O YMSM/MW	20 (74.1%)	20 (74.1%)	22 (88.0%)	19 (67.9%)
Q/O YMSW-only	29 (46.8%)	25 (39.1%)	37 (60.7%)	50 (79.4%)

Values represent percentages of individuals within each group. Hetero = heterosexual/straight; YMSW = young men who have sex with women; YMSM = young men who have sex with men; YMSMW = young men who have sex with men and women; Q/O = questioning/other

<sup>a</sup>Because of the small sample sizes of these groups, analyses were not performed/reported for members of these groups

behaviors and STI testing. We conducted analyses separately for young men and young women. In each model, as covariates we included the dichotomized race/ethnicity variable and the continuous variables of age and parental sexual health discussion scores. We included youths' discussions of sexual health issues with their parents as a covariate because variability among youth in having such discussions might also account for variability in their sexual health risk behavior (i.e., this could serve as a protective factor; Huebner & Howell, 2003). In our models for young men, the reference group was young men who identified as heterosexual/straight and only had sex with women. In our models for young women, the reference group was young women who identified as heterosexual/straight and only had sex with men.

## Results

Engagement levels in each sexual health risk behavior are in Tables 3 and 4. For young men, the percentage of young men engaging in risk behavior tended to be higher for the various sexual minority groups relative to the heterosexual YMSW-only group (Table 3). For young women, similar contrasts were evident between sexual minority groups and heterosexual YWSM-only (Table 4). The large majority of all youth reported they had not or were not sure if they had been tested for STIs.

### Sexual Health Risk Behavior Among Young Men

Results for sexual health risk disparities for young men are presented in Table 5. First, heterosexual YMSM/MW, gay YMSM-only, bisexual YMSMW, and questioning/other YMSM/MW

each were more likely than heterosexual YMSW-only to report having sex with unfamiliar partners (adjusted OR = 2.49–4.99,  $p < .01$ –.001). In contrast, bisexual YMSW-only and questioning/other YMSW-only did not differ from heterosexual YMSW-only on their likelihood of having sex with unfamiliar partners. Second, in relation to having sex while using substances, heterosexual YMSM/MW, bisexual YMSMW, bisexual YMSW-only, and questioning/other YMSM/MW each were more likely than heterosexual YMSW-only to report having sex while using substances (adjusted OR = 2.22–5.32,  $p < .05$ –.001). Gay YMSM-only and questioning/other YMSW-only did not differ from heterosexual YMSW-only on their likelihood of having sex while using substances. Third, heterosexual YMSM/MW, gay YMSM-only, questioning/other YMSM/MW, and questioning/other YMSW-only were more likely than heterosexual YMSW-only to never/sometimes use protection rather than always use protection (adjusted OR = 1.99–11.37,  $p < .01$ –.001). Bisexual YMSMW and bisexual YMSW-only did not differ from heterosexual YMSW-only in their likelihood of using protection. Finally, as shown in Table 7 for young men, there were no significant sexual orientation-based differences in their reports of whether they had ever been tested for an STI.

### Sexual Health Risk Behavior Among Young Women

Results for sexual health risk disparities for young women are presented in Table 6. First, heterosexual YWSW/MW, bisexual YWSMW, bisexual YWSM-only, and questioning/other YWSW/MW each were more likely than heterosexual YWSM-only to report having sex with unfamiliar partners (adjusted OR = 1.49–6.49,  $p < .05$ –.001). Lesbian YWSW-only and questioning/other YWSM-only did not differ from heterosexual YWSM-only on their likelihood of having sex with unfamiliar

**Table 4** Number and percentage of youth engaging in sexual health risk behaviors: Young women

	Has had sex with unfamiliar partner (vs. no)	Has had sex with substances (vs. no)	Never/sometimes use protection (vs. always)	No/not sure to STI testing (vs. yes)
Hetero YWSM-only	411 (19.6%)	682 (32.0%)	1100 (53.4%)	1477 (69.5%)
Hetero YWSW/MW	31 (46.3%)	41 (62.1%)	42 (66.7%)	33 (51.6%)
Lesbian YWSW-only	9 (30.0%)	11 (34.4%)	29 (90.6%)	27 (84.4%)
Lesbian YWSM/MW	a	a	a	a
Bisexual YWSW-only	a	a	a	a
Bisexual YWSM/MW	62 (50.8%)	65 (50.8%)	86 (75.4%)	76 (59.8%)
Bisexual YWSM-only	41 (27.2%)	59 (38.1%)	79 (51.3%)	102 (65.4%)
Q/O YWSW/MW	18 (62.1%)	14 (46.7%)	21 (70.0%)	19 (63.3%)
Q/O YWSM-only	17 (27.9%)	17 (27.9%)	22 (37.3%)	44 (72.1%)

Values represent percentages of individuals within each group. Hetero = heterosexual/straight; YWSM = young women who have sex with men; YWSW = young women who have sex with women; YWSM/MW = young women who have sex with men and women; Q/O = questioning/other

<sup>a</sup>Because of the small sample sizes of these groups, analyses were not performed/reported for members of these groups

partners. Second, in relation to having sex while using substances, heterosexual YWSW/MW, bisexual YWSM/MW, and questioning/other YWSW/MW each were more likely than heterosexual YWSM-only to report having sex while using substances (adjusted OR = 2.15–4.54,  $p < .05$ –.001). Lesbian YWSW-only, bisexual YWSM-only, and questioning/other YWSM-only did not differ from heterosexual YWSM-only on their likelihood of having sex while using substances. Third, lesbian YWSW-only and bisexual YWSM/MW were more likely than heterosexual YWSM-only to never/sometimes use protection rather than always use protection (adjusted OR = 24.91 and 2.57,  $p < .001$ , respectively). In contrast, questioning/other YWSM-only were less likely than heterosexual YWSM-only to never/sometimes use protection rather than always use protection (adjusted OR = 0.54,  $p < .05$ ). Heterosexual YWSW/MW, bisexual YWSM-only, and questioning/other YWSW/MW did not differ from heterosexual YWSM-only in their likelihood of using protection. Finally, as shown in Table 7 for young women, heterosexual YWSW/MW and bisexual YWSM/MW were less likely to say they had not or were not sure if they had been tested for an STI than heterosexual YWSM-only (adjusted OR = 0.42 and 0.59,  $p < .01$ , respectively). In contrast, lesbian YWSW-only were more likely than heterosexual YWSM-only to say they had not or were not sure if they had been tested for an STI (adjusted OR = 3.92,  $p < .05$ ). Bisexual YWSM-only and both groups of questioning/other young women (YWSW/MW and YWSM-only) did not differ from heterosexual YWSM-only in their reports of whether they had ever been tested for an STI.

## Discussion

Few studies of the sexual health behaviors of youth include measures that assess both sexual behavior and sexual identity, or consider multiple behavior risks of both adolescent young

men and women. This large population sample allowed us to analyze sexual orientation-based differences among young men and women using a multidimensional assessment of sexual orientation, and across a number of sexual health behaviors. These advantages are important because women remain underrepresented in research on sexual health risk among sexual minorities, many studies among sexual minorities have utilized only behavior-based identity indicators, and the focus has been on condomless sex without attention to a broader array of risk behaviors. The current findings provide a more expansive and nuanced understanding of sexual health risk disparities for sexual minority youth and underscore the importance of widening attention to a greater number of risk behaviors.

We identified two groups of youth who reported consistently greater sexual health risk behavior compared to heterosexual youth with only different-sex partners. For both young men and women, youth who reported heterosexual or questioning identities—but who had sex with same-sex partners—were at consistently greater risk than heterosexual youth with only different-sex partners. Indeed, the heterosexual young men who had sex with men in this study reported more consistent and often larger risk levels than the gay young men who had sex with men. The same contrast applied for heterosexual young women who had sex with women relative to lesbian young women who had sex with women, with the unsurprising exception of using protection (for which lesbian young women who only had sex with women reported far more likelihood of not using protection). Further, there has been little attention to sexual health behavior risks among individuals who are questioning their sexual identities. The absence of research on questioning youth represents a stark omission, as adolescence is a period for sexual identity development (Tolman & McClelland, 2011). It also points to a limitation of using only behavior indicators of sexual orientation, which cannot identify this group of youth. Thus, both of these findings highlight the impor-

**Table 5** Sexual risk behavior: Young men

	Young men		
	Has had sex with unfamiliar partner (vs. no)	Has had sex with substances (vs. no)	Never/sometimes use protection (vs. always)
Sexual orientation			
Hetero YMSW-only	–	–	–
Hetero YMSM/MW	4.99*** (2.60, 9.57)	5.32*** (2.82, 10.06)	2.72** (1.44, 5.12)
Gay YMSM-only	2.49*** (1.46, 4.24)	0.81 (0.46, 1.44)	3.36*** (1.88, 6.01)
Gay YMSW/MW	<sup>a</sup>	<sup>a</sup>	<sup>a</sup>
Bisexual YMSM-only	<sup>a</sup>	<sup>a</sup>	<sup>a</sup>
Bisexual YMSMW	2.83** (1.41, 5.65)	7.19*** (3.41, 15.20)	0.92 (0.47, 1.80)
Bisexual YMSW-only	0.60 (0.26, 1.37)	2.22* (1.12, 4.36)	1.51 (0.77, 2.97)
Q/O YMSM/MW	3.78** (1.52, 9.40)	8.72*** (3.17, 23.98)	11.37*** (2.85, 45.33)
Q/O YMSW-only	1.12 (0.66, 1.91)	1.23 (0.73, 2.10)	1.99** (1.17, 3.38)
Covariates			
Racial/ethnic minority (ref. group: White)	2.06*** (1.72, 2.45)	1.01 (0.84, 1.21)	0.80* (0.68, 0.96)
Age	1.17*** (1.08, 1.26)	1.32*** (1.22, 1.43)	0.99 (0.92, 1.07)
Parent discussions	0.93 (0.85, 1.02)	0.88** (0.80, 0.97)	1.01 (0.92, 1.11)

Values represent adjusted odds ratios with 95% confidence intervals reported in parentheses. Hetero = heterosexual/straight; YMSW = young men who have sex with women; YMSM = young men who have sex with men; YMSMW = young men who have sex with men and women; Q/O = questioning/other. The reference group for sexual orientation-based comparisons was hetero YMSW-only; the reference group for racial/ethnic group-based comparisons was White  
\*  $p < .05$ ; \*\*  $p < .01$ ; \*\*\*  $p < .001$

<sup>a</sup>Because of the small sample sizes of these groups, analyses were not performed/reported for members of these groups

tance of considering sexual orientation with a multidimensional framework (Institute of Medicine, 2011; Laumann et al. 1994).

Our findings also add some nuance to extant findings on elevated sexual health risk behavior reported among bisexual men and women (Bostwick et al., 2015; Everett et al., 2014; Friedman et al., 2014; Logie et al., 2015; Sanders et al., 2008; Tornello et al., 2014). Our pattern of findings highlights the importance of further considering the sex of sexual partners: for both young men and women, bisexuals with partners of both sexes reported consistently elevated risk compared to those with only different-sex partners. Scholars have noted the complexity of assessing bisexuality in conducting research among sexual minorities (Bauer & Brennan, 2013). Our findings add to this point by showing that failing to consider the intersection of identity with behavior obscures distinct patterns of sexual health risk among sexual minority youth.

Our patterns of elevated sexual health risk behavior for gay young men who reported only having sex with men largely mirrored findings documented in the extant literature (Blake et al., 2001; Mustanski et al., 2011). Similar to extant findings, gay young men who only had sex with men were more likely to have had sex with unfamiliar partners and less likely to use protection than heterosexual young men who only had sex with women. These elevated risks are concerning. At the same time, however, these groups did not differ in their reports of having had sex while using substances (though bisexual young men did) or on STI testing. Together these results might relate to sexual minority cultural norms for sexual behavior. For example, gay, lesbian, and bisexual men and women have been found to have more liberal attitudes toward sexuality (e.g., openness toward recreational sex; Mustanski, et al., 2011; Rissel, Richters, Grulich, Visser, & Smith, 2003). Other sociocultural

**Table 6** Sexual risk behavior: Young women

	Young women		
	Has had sex with unfamiliar partner (vs. no)	Has had sex with substances (vs. no)	Never/sometimes use protection (vs. always)
Sexual orientation			
Hetero YWSM-only	–	–	–
Hetero YWSW/MW	3.75*** (2.22, 6.32)	4.54*** (2.63, 7.84)	1.54 (0.90, 2.63)
Lesbian YWSW-only	1.59 (0.71, 3.52)	0.86 (0.39, 1.90)	24.91*** (3.39, 183.29)
Lesbian YWSM/MW	<sup>a</sup>	<sup>a</sup>	<sup>a</sup>
Bisexual YWSW-only	<sup>a</sup>	<sup>a</sup>	<sup>a</sup>
Bisexual YWSMW	4.44*** (3.04, 6.49)	2.79*** (1.92, 4.07)	2.57*** (1.66, 3.96)
Bisexual YWSM-only	1.49* (1.02, 2.18)	1.26 (0.89, 1.79)	0.89 (0.64, 1.24)
Q/O YWSW/MW	6.49*** (3.03, 13.87)	2.15* (1.03, 4.48)	1.97 (0.89, 4.35)
Q/O YWSM-only	1.61 (0.89, 2.88)	0.98 (0.55, 1.74)	0.54* (0.32, 0.93)
Covariates			
R/E minority (ref. group: White)	0.98 (0.80, 1.21)	0.70*** (0.58, 0.84)	1.15 (0.97, 1.37)
Age	1.12* (1.02, 1.23)	1.25*** (1.15, 1.36)	1.00 (0.92, 1.08)
Parent discussions	0.83** (0.74, 0.93)	0.79*** (0.71, 0.88)	0.97 (0.88, 1.08)

Values represent adjusted odds ratios with 95% confidence intervals reported in parentheses. Hetero = heterosexual/straight; YWSM = young women who have sex with men; YWSW = young women who have sex with women; YWSMW = young women who have sex with men and women; Q/O = questioning/other. The reference group for sexual orientation-based comparisons was hetero YWSM-only; the reference group for racial/ethnic group-based comparisons was White

\*  $p < .05$ ; \*\*  $p < .01$ ; \*\*\*  $p < .001$

<sup>a</sup>Because of the small sample sizes of these groups, analyses were not performed/reported for members of these groups

factors may contribute to these patterns, such as the media (e.g., dating apps) through which or the venues where young gay and bisexual men meet their partners for sexual contact (Bauermeister, Leslie-Santana, Johns, Pingel, & Eisenberg, 2011; Clatts et al., 2005). Multiple partners and lack of protection have been described as risk indicators among sexual minority adults (particularly males); it may be that this pattern is combined with substance use among bisexual young men, for whom studies show higher substance use risk behavior compared to gay and lesbian youth (Coker, Austin, & Schuster, 2010; Loosier & Dittus, 2010). Ultimately, more research is needed on the underlying motivations or norms that could explain why disparities for sexual minorities are more pronounced for some risk behaviors than others (Mustanski, Donenberg, & Emerson, 2006).

Finally, our findings emphasize the need for more sexual health research focused on sexual minority young women, based on both identity and behavior indices of sexual orientation. Other scholars have also called for such an increase (Diamant et al., 2000; Marrazzo & Gorgos, 2012), and the limited extant empirical work has underscored this need (Goodenow et al., 2008; Oshri et al., 2014; Riskind et al., 2014; Saewyc et al., 2008). The patterns of elevated risk across sexual health behaviors and for STI testing differed for specific groups of sexual minority young women and thus deserve further attention.

### Limitations, Strengths, and Implications

Ideally this study would include robust measures of sexual health behavior and risk (Davis, Yarber, & Bauserman, 1998):



**Table 7** Testing for sexually transmitted infections

	Young men No/not sure to STI testing (vs. yes)	Young women No/not sure to STI testing (vs. yes)
Sexual orientation		
Hetero YMSW-only	–	
Hetero YMSM/MW	0.74 (0.36, 1.52)	
Gay YMSM-only	1.18 (0.56, 2.50)	
Gay YMSW/MW	<sup>a</sup>	
Bisexual YMSM-only	<sup>a</sup>	
Bisexual YMSMW	1.48 (0.53, 4.12)	
Bisexual YMSW-only	0.68 (0.28, 1.68)	
Q/O YMSM/MW	0.53 (0.21, 1.34)	
Q/O YMSW-only	0.73 (0.38, 1.39)	
Hetero YWSM-only		–
Hetero YWSW/MW		0.42** (0.25, 0.72)
Lesbian YWSW-only		3.92* (1.16, 13.25)
Lesbian YWSM/MW		<sup>a</sup>
Bisexual YWSW-only		<sup>a</sup>
Bisexual YWSMW		0.59** (0.40, 0.86)
Bisexual YWSM-only		0.77 (0.54, 1.10)
Q/O YWSW/MW		0.86 (0.40, 1.88)
Q/O YWSM-only		1.19 (0.66, 2.18)
Covariates		
R/E minority (ref. group: White)	0.63*** (0.50, 0.78)	0.52*** (0.44, 0.63)
Age	0.91 (0.82, 1.00)	0.72*** (0.66, 0.79)
Parent discussions	0.62*** (0.54, 0.70)	0.77*** (0.69, 0.86)

Values represent adjusted odds ratios with 95% confidence intervals reported in parentheses. Hetero = heterosexual/straight; YMSW = young men who have sex with women; YMSM = young men who have sex with men; YMSMW = young men who have sex with men and women; Q/O = questioning/other; YWSM = young women who have sex with men; YWSW = young women who have sex with women; YWSMW = young women who have sex with men and women. For young men, the reference group for sexual orientation-based comparisons was hetero YMSW-only; for young women, the reference group for sexual orientation-based comparisons was hetero YWSM-only; the reference group for racial/ethnic group-based comparisons was White

\*  $p < .05$ ; \*\*  $p < .01$ ; \*\*\*  $p < .001$

<sup>a</sup>Because of the small sample sizes of these groups, analyses were not performed/reported for members of these groups

as with other population surveillance surveys for youth, the DCYA included only single-item sexual health indicators. Additional items could assess, for example, not only whether youth had sex with casual partners, but also whether they used protection when doing so. Second, the item that asked about the use of protection combined oral sex and sexual intercourse; future research should distinguish between the two. Similar to this limitation, the screening item used to select students who were sexually active combined both oral sex and sexual intercourse as part of the question. Future research should consider each of these behaviors separately and how they may further distinguish youth on their overall levels of risk behavior. Third, the racial and ethnic diversity was too limited to permit additional consideration of disparities based on how specific sexual orientation and gender categories further intersected with race/ethnicity. Fourth, although we included identity and behavior indicators of sexual orientation, additional categories might be considered in future research (e.g., “mostly heterosexual”; Corliss, Austin, Roberts, & Molnar, 2009). Finally, future research with even larger and more nationally representative samples should consider potential significant differences between specific sexual minority groups (e.g., comparing bisexual young men who have sex with men and women to bisexual young men who have sex only with women) on certain risk behaviors.

Attention to sexual minority youth sexual health behavior historically has focused on young men or more specifically on HIV. This is one of the first studies of a general population of youth to give attention to a range of indicators of adolescent sexual health behavior, and to include both identity and behavior measures relevant to the study of sexual minority young men and women. Recent research indicates a decline in sexual health education in the U.S. for adolescents (Lindberg, Maddow-Zimet, & Boonstra, 2016). The patterns here underscore sexual health behavior risk for sexual minorities and point to the need for universal adolescent sexual health education that is inclusive of the needs and realities of sexual minority youth.

### Compliance with Ethical Standards

**Conflict of interest** The authors declare that they have no conflict of interest.

**Ethical Standard** All procedures performed in this study were in accordance with the ethical standards of the institutional and with the 1964 Declaration of Helsinki and its later amendments or comparable ethical standards.

**Informed Consent** Informed assent was obtained from all students who participated in the DCYA.

### References

- Bailey, J. V., Farquhar, C., Owen, C., & Mangtani, P. (2004). Sexually transmitted infections in women who have sex with women. *Sexually Transmitted Infections*, *80*, 244–246.
- Bailey, J. V., Farquhar, C., Owen, C., & Whittaker, D. (2003). Sexual behaviour of lesbians and bisexual women. *Sexually Transmitted Infections*, *79*, 147–150.
- Bauer, G. R., & Brennan, D. J. (2013). The problem with ‘behavioral bisexuality’: Assessing sexual orientation in survey research. *Journal of Bisexuality*, *13*, 148–165.
- Bauer, G. R., Jairam, J. A., & Baidooobonso, S. M. (2010). Sexual health, risk behaviors, and substance use in heterosexual-identified women with female sex partners: 2002 U.S. National Survey of Family Growth. *Sexually Transmitted Diseases*, *37*, 531–537.
- Bauermeister, J. A., Leslie-Santana, M., Johns, M. M., Pingel, E., & Eisenberg, A. (2011). Mr. Right and Mr. Right Now: Romantic and casual partner-seeking online among young men who have sex with men. *AIDS and Behavior*, *15*, 261–272.
- Blake, S. M., Ledsky, R., Lehman, T., Goodenow, C., Sawyer, R., & Hack, T. (2001). Preventing sexual risk behaviors among gay, lesbian, and bisexual adolescents: The benefits of gay-sensitive HIV instruction in schools. *American Journal of Public Health*, *91*, 940–946.
- Bostwick, W. B., Hughes, T. L., & Everett, B. (2015). Health behavior, status, and outcomes among a community-based sample of lesbian and bisexual women. *LGBT Health*, *2*, 121–126.
- Celentano, D. D., Valleroy, L. A., Sifakis, F., MacKellar, D. A., Hylton, J., Thiede, H., et al. (2006). Associations between substance use and sexual risk among very young men who have sex with men. *Sexually Transmitted Diseases*, *33*, 265–271.
- Centers for Disease Control and Prevention (2015a). *HIV surveillance report, 2015* (Vol. 27). Retrieved from <http://www.cdc.gov/hiv/library/reports/hiv-surveillance.html>.
- Centers for Disease Control and Prevention (2015b). *YRBSS data and documentation*. Retrieved from <http://www.cdc.gov/healthyyouth/data/yrbss/data.htm>.
- Charlton, B. M., Corliss, H. L., Missmer, S. A., Frazier, A. L., Rosario, M., Kahn, J. A., et al. (2011). Reproductive health screening disparities and sexual orientation in a cohort study of U.S. adolescent and young adult females. *Journal of Adolescent Health*, *49*, 505–510.
- Clatts, M. C., Goldsamt, L. A., & Yi, H. (2005). Club drug use among young men who have sex with men in NYC: A preliminary epidemiological profile. *Substance Use and Misuse*, *40*, 1317–1330.
- Coker, T. R., Austin, S. B., & Schuster, M. A. (2010). The health and health care of lesbian, gay, and bisexual adolescents. *Annual Review of Public Health*, *31*, 457–477.
- Corliss, H. L., Austin, S. B., Roberts, A. L., & Molnar, B. E. (2009). Sexual risk in “mostly heterosexual” young women: Influence of social support and caregiver mental health. *Journal of Women’s Health*, *18*, 2005–2010.
- Davis, C. M., Yarber, W. L., & Bauserman, R. (Eds.). (1998). *Handbook of sexuality-related measures*. Thousand Oaks, CA: Sage.
- Diamant, A. L., Wold, C., Spritzer, K., & Gelberg, L. (2000). Health behaviors, health status, and access to and use of health care: A population-based study of lesbian, bisexual, and heterosexual women. *Archives of Family Medicine*, *9*, 1043–1051.
- Diamond, L. M. (2008). Female bisexuality from adolescence to adulthood: Results from a 10-year longitudinal study. *Developmental Psychology*, *44*, 5–14.
- Everett, B. G. (2013). Sexual orientation disparities in sexually transmitted infections: Examining the intersection between sexual identity and sexual behavior. *Archives of Sexual Behavior*, *42*, 225–236.
- Everett, B. G., Schnarrs, P. W., Rosario, M., Garofalo, R., & Mustanski, B. (2014). Sexual orientation disparities in sexually transmitted infection risk behaviors and risk determinants among sexually active adolescent males: Results from a school-based sample. *American Journal of Public Health*, *104*, 1107–1112.
- Fethers, K., Marks, C., Mindel, A., & Estcourt, C. S. (2000). Sexually transmitted infections and risk behaviours in women who have sex with women. *Sexually Transmitted Infections*, *76*, 345–349.

- Friedman, M. R., Wei, C., Klem, M. L., Silvestre, A. J., Markovic, N., & Stall, R. (2014). HIV infection and sexual risk among men who have sex with men and women (MSMW): A systematic review and meta-analysis. *PLoS ONE*, *9*, e87139.
- Goldbaum, G., Perdue, T., & Higgins, D. (1996). Non-gay-identifying men who have sex with men: Formative research results from Seattle, Washington. *Public Health Reports*, *111*, 36–40.
- Goodenow, C., Szalacha, L. A., Robin, L. E., & Westheimer, K. (2008). Dimensions of sexual orientation and HIV-related risk among adolescent females: Evidence from a statewide survey. *American Journal of Public Health*, *98*, 1051–1058.
- Guzman, R., Colfax, G. N., Wheeler, S., Mansergh, G., Marks, G., Rader, M., et al. (2005). Negotiated safety relationships and sexual behavior among a diverse sample of HIV-negative men who have sex with men. *Journal of Acquired Immune Deficiency Syndromes*, *38*, 82–86.
- Huebner, A. J., & Howell, L. W. (2003). Examining the relationship between adolescent sexual risk-taking and perceptions of monitoring, communication, and parenting styles. *Journal of Adolescent Health*, *33*, 71–78.
- Institute of Medicine. (2011). *The health of lesbian, gay, bisexual, and transgender people: Building a foundation for better understanding*. Washington, DC: The National Academies Press.
- Laumann, E. O., Gagnon, J. H., Michael, R. T., & Michaels, S. (1994). *The social organization of sexuality: Sexual practices in the United States*. Chicago: University of Chicago Press.
- Lindberg, L. D., Maddow-Zimet, I., & Boonstra, H. (2016). Changes in adolescents' receipt of sex education, 2006–2013. *Journal of Adolescent Health*, *58*, 621–627.
- Logie, C. H., Navia, D., & Loutfy, M. R. (2015). Correlates of a lifetime history of sexually transmitted infections among women who have sex with women in Toronto, Canada: Results from a cross-sectional internet-based survey. *Sexually Transmitted Infections*, *91*, 278–283.
- Loosier, P. S., & Dittus, P. J. (2010). Group differences in risk across three domains using an expanded measure of sexual orientation. *Journal of Primary Prevention*, *31*, 261–272.
- Marrazzo, J. M., & Gorgos, L. M. (2012). Emerging sexual health issues among women who have sex with women. *Current Infectious Disease Reports*, *14*, 204–211.
- Mustanski, B., Birkett, M., Greene, G. J., Rosario, M., Bostwick, W., & Everett, B. G. (2014). The association between sexual orientation identity and behavior across race/ethnicity, sex, and age in a probability sample of high school students. *American Journal of Public Health*, *104*, 237–244.
- Mustanski, B., Donenberg, G., & Emerson, E. (2006). I can use a condom, I just don't: The importance of motivation to prevent HIV in adolescent seeking psychiatric care. *AIDS and Behavior*, *10*, 753–762.
- Mustanski, B. S., Newcomb, M. E., Du Bois, S. N., Garcia, S. C., & Grov, C. (2011). HIV in young men who have sex with men: A review of epidemiology, risk and protective factors, and interventions. *Journal of Sex Research*, *48*, 218–253.
- Oshri, A., Handley, E. D., Sutton, T. E., Wortel, S., & Burnette, M. L. (2014). Developmental trajectories of substance use among sexual minority girls: Associations with sexual victimization and sexual health risk. *Journal of Adolescent Health*, *55*, 100–106.
- Ott, M. Q., Corliss, H. L., Wypij, D., Rosario, M., & Austin, S. B. (2011). Stability and change in self-reported sexual orientation identity in young people: Application of mobility metrics. *Archives of Sexual Behavior*, *40*, 519–532.
- Pathela, P., & Schillinger, J. A. (2010). Sexual behaviors and sexual violence: Adolescents with opposite-, same-, or both-sex partners. *Pediatrics*, *126*, 879–886.
- Riskind, R. G., Tornello, S. L., Younger, B. C., & Patterson, C. J. (2014). Sexual identity, partner gender, and sexual health among adolescent girls in the United States. *American Journal of Public Health*, *104*, 1957–1963.
- Rissel, C. E., Richters, J., Grulich, A. E., Visser, R. O., & Smith, A. (2003). Sex in Australia: Attitudes towards sex in a representative sample of adults. *Australian and New Zealand Journal of Public Health*, *27*, 118–123.
- Saewyc, E. M., Poon, C. S., Homma, Y., & Skay, C. L. (2008). Stigma management? The links between enacted stigma and teen pregnancy trends among gay, lesbian, and bisexual students in British Columbia. *Canadian Journal of Human Sexuality*, *17*, 123–139.
- Sanders, S. A., Graham, C. A., & Milhausen, R. R. (2008). T11-O-08 Bisexual women differ from lesbian and heterosexual women on several sexuality measures. *Sexologies*, *17*, S157–S158.
- Tat, S. A., Marrazzo, J. M., & Graham, S. M. (2015). Women who have sex with women living in low- and middle-income countries: A systematic review of sexual health and risk behaviors. *LGBT Health*, *2*, 91–104.
- Tolman, D. L., & McClelland, S. I. (2011). Normative sexuality development in adolescence: A decade in review, 2000–2009. *Journal of Research on Adolescence*, *21*, 242–255.
- Tornello, S. L., Riskind, R. G., & Patterson, C. J. (2014). Sexual orientation and sexual and reproductive health among adolescent young women in the United States. *Journal of Adolescent Health*, *54*, 160–168.
- Varghese, B., Maher, J. E., Peterman, T. A., Branson, B. M., & Steketee, R. W. (2002). Reducing the risk of sexual HIV transmission: Quantifying the per-act risk for HIV on the basis of choice of partner, sex act, and condom use. *Sexually Transmitted Diseases*, *29*, 38–43.
- Wohl, A. R., Johnson, D. F., Lu, S., Jordan, W., Beall, G., Currier, J., et al. (2002). HIV risk behaviors among African American men in Los Angeles County who self-identify as heterosexual. *Journal of Acquired Immune Deficiency Syndromes*, *31*, 354–360.
- Young, R. M., & Meyer, I. H. (2005). The trouble with “MSM” and “WSM”: Erasure of the sexual-minority person in public health discourse. *American Journal of Public Health*, *95*, 1144–1149.